

Changes in Profitability of Chicken Broiler Production in 2008-2013

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Abstract: The profitability of broiler chicken production depends on many interrelated factors, such as the size of the farm, farming system, the genetic potential, feed price and the quality of chicken meat obtained as a final product, e.g., meat, and a strategy of their sales on the domestic and foreign market. Economic analysis were conducted in randomly selected farms growing commercial broilers, from April 2008 to March 2013 (28 cycles all together), at the same time in three buildings, with 46 thousands to 54 thousands one-day chickens. In the analyzed period, broilers were reared for 35-50 d. The average slaughter body mass ranged from 2.36 kg to 2.99 kg with feed conversion ratio (FCR) 1.68 kg of feed/kg of body weight gain to 1.78 kg of feed/kg of body weight gain. Stock mortality at that time ranged from 3.5% to 6.4%. On the basis of macroeconomic data, a clear relationship between the increase in the period particularly from 2004 onwards, prices of feed 33.6% and the purchase price of livestock 22.5% in the case of the evaluated farms were found. These values were 27.9% and 31.7%, respectively. From the analysis of the relationship between different types of broiler production costs, it was concluded that the main determinant of the profitability of live poultry production was the cost of feed and first of all was the prices of feed. This means that the boom in live poultry production is variable, resulting in consequences for production and income.

Key words: Broiler chickens, profitability, export.

1. Introduction

As a result of access to the international market since Poland joining European Union (EU) in 2004, the production of broiler chickens increased significantly. At the same time, the average consumption of poultry meat per capita has been systematically increasing. It is currently (2014) exceeding 27 kg/capita/annum. According to the National Poultry Council—The Chamber of Commerce [1] in 2014, domestic production of poultry meat will increase by 8%-10% and it will exceed 2 million tons, out of which almost 30%, i.e., approximately 650 thousand tons will be exported. In the export of poultry meat, Poland occupies the third place in the world, after the US and Brazil, and ranks third in the EU after France and the Netherlands in

poultry exports to third countries, where it supplied 63.5 thousand tons in the first half of 2014, compared with 56.8 thousand tons in 2013 [2].

The factor limiting the volume of broiler chickens production, was the implementation of EU directive (2007/43/EC) in 2010, setting out the maximum weight of chickens 42 kg of body weight/m² of the floor area in broiler. Broiler producers initially feared that the implementation of the above directive will reduce the profitability of chickens meat production, but the results of the inspections carried out by veterinary services showed that the producers had quickly adapted to EU requirements, with the appropriate level of the welfare of broiler houses.

The profitability of broiler chicken production depends on many mutually interrelated factors [3], the size of the farm, farming system, the genetic potential of chickens kept for meat, the quality and price of feed and the quality of the final products, i.e., meat or its

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products, and the strategy of their sales on domestic and foreign markets. Knowledge of the evolution of these factors and their proper interpretation is essential for each producer to analyse the production process and efficient use of resources and capabilities [4-6]. The main aim of this paper was to present the causes for the changes that have occurred in the profitability of the production of broiler chickens from 2008 to 2013 in Poland with consideration to micro- and macro-economic predictions.

2. Materials and Methods

Randomly selected farms producing broiler chickens on litter underwent economic analysis from April 2008 to March 2013 at the same time in three buildings sized about 1,000 m² each, which inhabited 28 times within 2-3 d with 46 thousands to 54 thousands of day-old meat chicks hybrids of Hubbard Flex or Ross 308. The study used information on production and economic results of each production cycle of broiler chickens in the documentation that was systematically conducted in "one unit" farm for 28 productive cycles. In the research period, broiler rearing lasted 35-50 d and ended at obtaining an average weight of chickens of 2.36-2.99 kg using 1.68-1.78 kg of feed/kg of body weight gain. Average losses of the herd at the time ranged from 3.5% to 6.4%, with the exception of 19 July 2011, when they amounted to 10.3%.

3. Results and Discussion

In order to cope with competition on the EU market during the period preceding the accession restructuring actions were taken in poultry industry. There was an expansion of production capacity and facilities adapted to EU standards. This process is facilitated productive investment realized using preferential loans for livestock producers as part of the adjustment. The implementation of modern solutions resulted in an improved efficiency and reduced costs of fattening broiler production, while

providing them with high veterinary and sanitary standards. As a result of the investments in the development of this branch of production, even before Polish accession to the EU, domestic producers supplied poultry characterized by high quality. As a result of investments made in this sector modern European, scale production facilities (poultry houses, hatcheries and slaughterhouses and processing plants) were established guaranteeing the achievement of the highest standards. In the first year of Polish membership in the EU, abolition of customs barriers resulted in a 4-fold increase in imports of poultry into Poland. In the period 2004-2013, poultry imports complemented domestic supply, primarily in the field of meat processing. Polish importers bought mainly cheap assortments of poultry meat in foreign markets and sold expensive assortments for export. The dynamic growth in exports contributed to a growing balance of foreign trade. Since Polish accession to the EU, a positive balance of foreign trade in poultry has increased 10-fold, from 54 thousand tons to nearly 540 thousand tons in 2013. Also, the consumption of poultry meat in the period 2003-2013 increased from 19.7 kg/capita in 2003 to 26.6 kg/capita in 2012. In the same period, pork consumption per capita showed a slight downward trend and beef consumption decreased more than 3-fold (Table 1). As a result, there have been significant changes in the structure of domestic meat consumption. This means that the decrease in the consumption of red meat (pork and beef) was compensated with an increase in the consumption of poultry meat. The expansion of poultry meat in recent years was undoubtedly supported by low price, higher awareness of healthy eating and reduction fat in your daily diet. Many consumers started to prefer poultry, considering it to be more beneficial to health, due to its lower caloric value. Equally significant is also easier and faster way of preparing poultry for consumption.

Table 1 Meat consumption and its structure in Poland in 2003-2012.

Year	Meat consumption (kg/person)				% Share of individual types of meat in total meat consumption		
	Total (meat and giblets)	Pork	Beef	Poultry	Pork	Beef	Poultry
2003	72.1	41.2	5.8	19.7	57.1	8.0	27.3
2004	71.8	39.1	5.3	22.2	54.5	7.4	30.9
2005	71.2	39.0	3.9	23.4	54.8	5.5	32.9
2006	74.3	41.4	4.5	23.7	55.7	6.1	31.9
2007	77.6	43.6	4.0	24.0	56.2	5.2	30.9
2008	75.3	42.7	3.8	24.1	56.7	5.0	32.0
2009	75.0	42.4	3.6	24.0	56.5	4.8	32.0
2010	73.7	42.2	2.4	24.6	57.5	3.3	33.4
2011	73.4	42.5	2.1	25.0	57.9	2.9	34.1
2012*	71.7	39.0	1.8	26.6	54.4	2.5	37.1

*Estimate by Institute of Agriculture and Food Economics—National Research Institute IERiGŻ-PIB.

Source: Central Statistical Office of Poland GUS (2014).

High quality of poultry produced in Poland was affected by many factors. They include: progress in poultry breeding which shaped meat yield expressed in appropriate proportions of meat, fat and bone and proper resistance to illnesses, the introduction of good genotypes of poultry meat, properly balanced ration for fast weight gain while maintaining the desired meat quality, high hygiene of rearing at each stage of production and the technological regime. Accession to the EU resulted in the adoption of EU regulations by Poland on community trade and standards in the veterinary and sanitary rules on the welfare of birds and the environment. The high quality requirements for poultry producers, competitive price range of domestic poultry and unlimited tariff barriers to market access of EU member states were a stimulator of the dynamic development of the industry in the coming years.

Based on national data from the Ministry of Agriculture and Rural Development, it is found that a clear relationship between the increase of livestock purchase prices by 22.5% especially in the period from 2011 onwards and the price of feed by 33.6% (Fig. 1); and in the case of the test farm, the values presented were 31.7% and 27.9%, respectively (Fig. 2).

The production growth trend in the farm was in line

with the overall national situation, where it also grew steadily from 1.130 thousand tons to 1.930 thousand tons, i.e., an increase of 70.8% (Fig. 3). The prosperity in the production of broiler chickens in 2008-2013 was supported by increasing demand on domestic and foreign market (Fig. 4) with a stable and negative trend in import of poultry meat (Fig. 4). Vermeij et al. [7] reached similar conclusions on the basis of comparative studies conducted in the Netherlands on the cost effectiveness of various systems of rearing broilers.

The highest cost-effectiveness was obtained in the test farm in certain months in 2009, 2010 and 2011, yet with large fluctuations in the value of individual components of the cost of that generated losses in production in the following month of the same years (Fig. 5). Lack of stability in the sphere of production of broiler chickens is not optimistic.

In July 2014, European Commission published another “short term outlook for arable crops, meat and dairy markets in the European Union” [8]. According to EU experts in the coming years, the growth rate of poultry production in the EU will be moderate. In 2014, the level of production will increase by 1.1% annually to 12.98 million tons of carcass weight equivalent, and in 2015 by 0.7% to 13.07 million tons. The growth rate of production will therefore be further

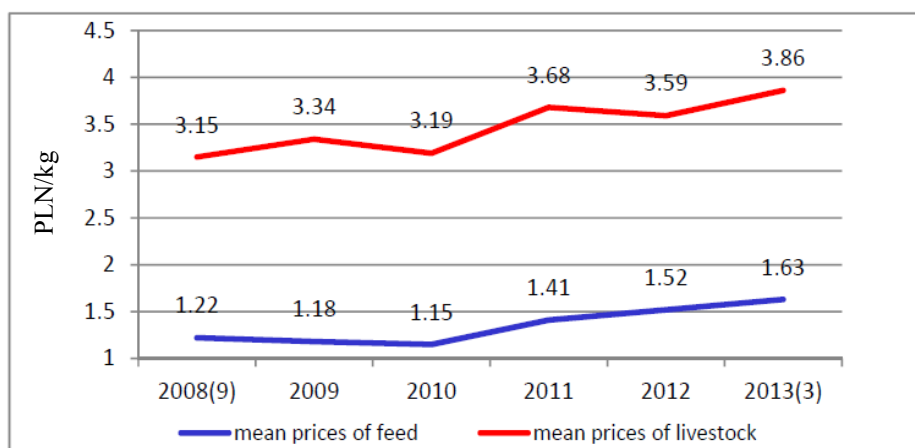


Fig. 1 Average price in 1 kg of broiler livestock and 1 kg of feed in 2008-2013 (Ministry of Agriculture and Rural Development, 2014).

PLN—polish currency (zloty).

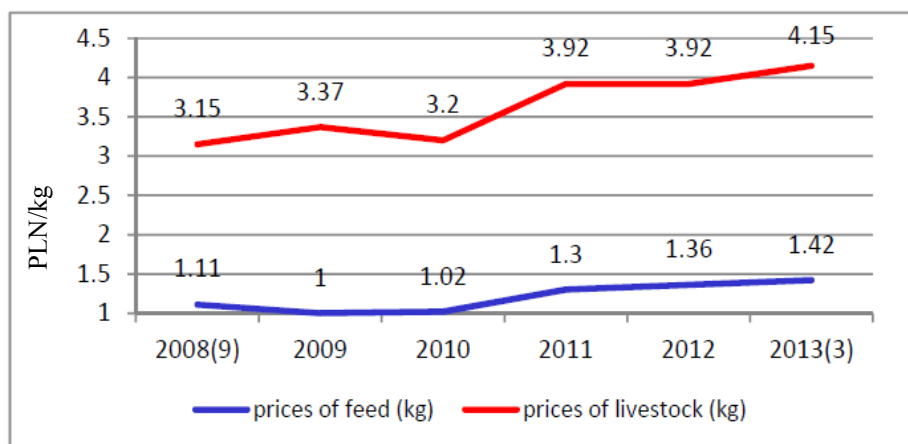


Fig. 2 Prices of 1 kg of livestock and of 1 kg of feed for broiler in 2008-2013 in the studied farm.

PLN—polish currency (zloty).

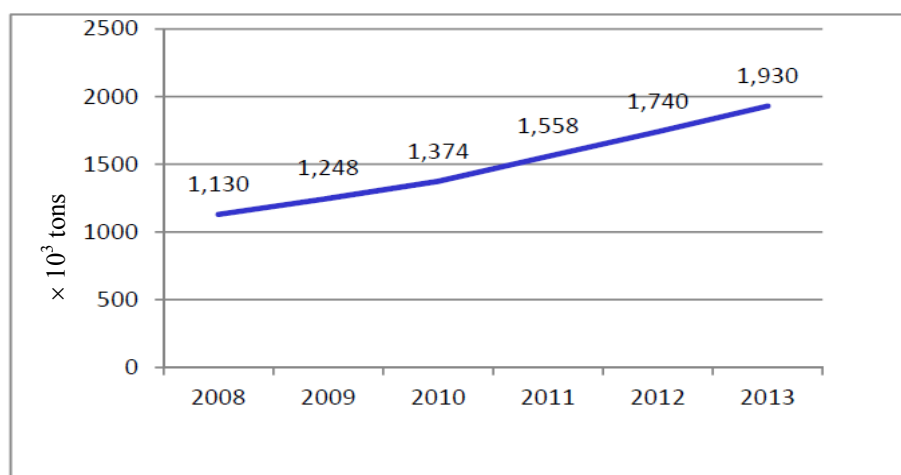


Fig. 3 Production of chicken meat in 2008-2013 in thousands of tons (IERiGŻ-PIB, 2014).

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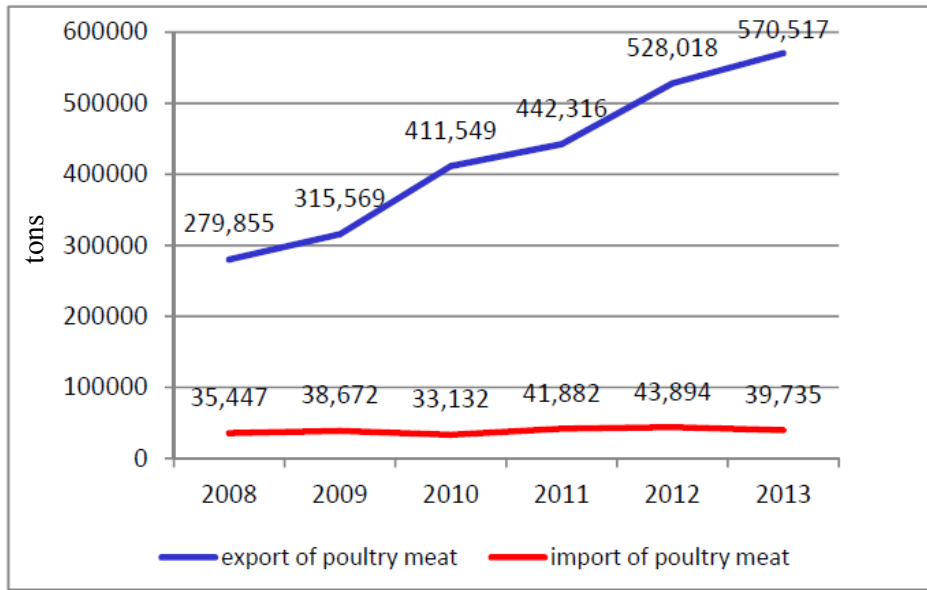
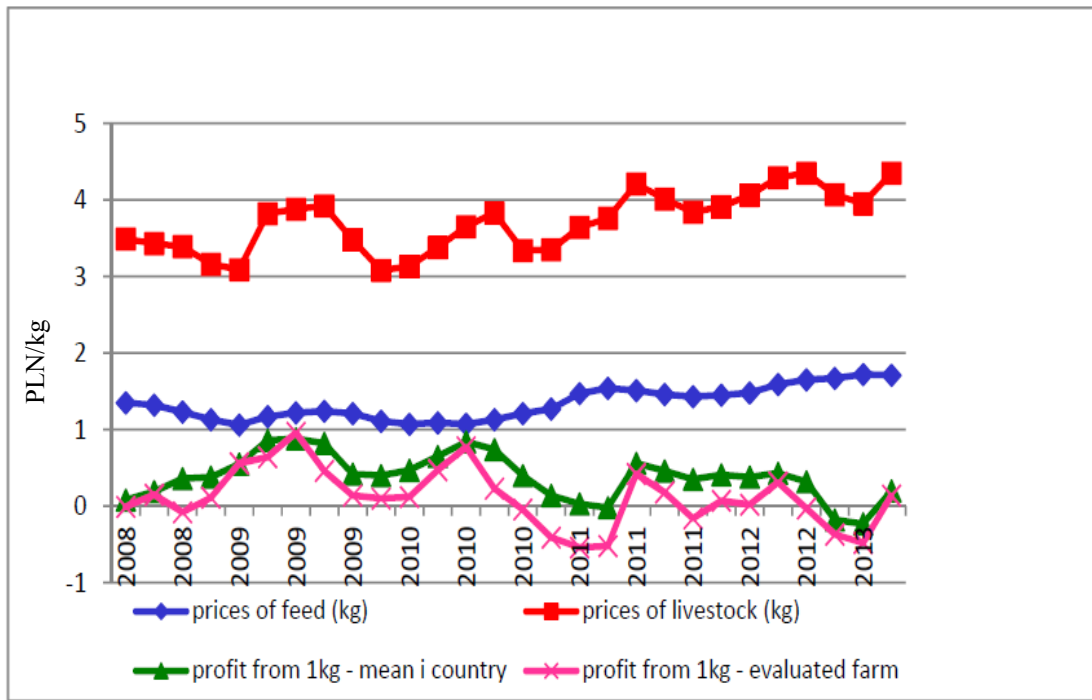


Fig. 4 Export and import of poultry meat in 2008-2013 in tons (Ministry of Agriculture and Rural Development, 2014).



Placement of chicken

Fig. 5 Relationships between the prices (in the Polish zloties) of 1 kg of feed and broiler body weight as well as a profit from 1 kg of livestock broiler body weight sales.

PLN-polish currency (zloty).

weakened in comparison with previous years (1.5% in 2013, 2% in 2011-2012 and 3.9% in 2010), due to the reconstruction of the production of pork and beef after the period of stagnation. Due to price competitiveness with red meat and still uncertain economic situation in

the EU, poultry consumption will continue to grow despite higher supply of other types of meat. In 2013, the level of EU poultry consumption increased in comparison to 2012 by 1.3% to 12.32 million tons, which corresponds to 24.3 kg/capita. The share of

poultry meat in the total meat consumption in the EU was 29.9%. In 2014 and 2015, white meat consumption will grow at a slower rate—by 0.9% and 0.4% per annum, respectively. The increase in consumption will be stimulated by higher production, decline in exports and slightly higher imports.

In 2013, the EU was still a significant net exporter of poultry meat, despite the suspension of the last subsidies to export frozen chicken carcasses in July 2013. EU sent 1.3 million tons of poultry to third country markets, approximately 1% less than the year before and a positive trade balance amounted to approximately 500 thousand tons. Due to the increasing competition of Brazilian poultry on the world market and the reduction of purchases by Russia in 2014, further decline in EU exports of poultry is expected, this time by as much as 2.5% to 1.27 million tons. Export to Ukraine will significantly reduce, both due to the increase in self-sufficiency and economic uncertainty stemming from political turmoil and the consequent weakening of the national currency. Deliveries to Russia have also declined for the past three years due to the growth of the national policy of self-sufficiency. The increase in exports to the Russian market in the first five months of this year fails to reverse the downward trend throughout the year. EU poultry supplies to African countries—South Africa and Benin, will increase this year, which however will not compensate for lower shipments to Saudi Arabia, Hong Kong and Ukraine. In 2015, EU exports should increase by 1% to 1.28 million tons. After a rise in imports of poultry to the EU in 2011 and 2012, last year there was a decrease in the level of imports by 6%, primarily due to lower supplies from Brazil (-12%). This was partially compensated by higher imports of Thai poultry (+15%). In 2014 and 2015 the supply from third countries will remain at a level similar to 2013. Imports from Thailand will decrease due to unstable political situation in this country, which will be compensated with higher imports from Brazil [8].

Joining Poland in 2004 EU, poultry industry opened the possibility of domestic poultry meat exports to the European market. This situation, together with the increase in domestic poultry meat ingestion, influenced the improvement of profitability and growth of broiler chickens production. Factor for a period of inhibited growth of broiler production was the need to implement directive 2007/43 on the welfare of broilers, which resulted in decreases in the amount of birds reared on 1 m² floor of the broiler house. In order to maintain an appropriate level of profitability of production, manufacture increased total number of rearing chickens. According to the forecasts of the Institute of Agricultural and Food Economics—National Research Institute (IERiGŻ-PIB) in Warsaw, Poland still maintain positive growth trend in broiler chickens production despite decreasing its cost-effectiveness. In fact, the growth of poultry meat production exceeded the expected level [9-14]. Long term forecasts for Europe did not predict such an increase in production [15], but at most they anticipated the stability and change of broiler farms' structure as well as an increase of large production units at the expense of the small ones. Moreover, a desire to improve the welfare of chickens along with achieving high quality of the end product was observed [16].

The analysis of the prices of broiler chickens indicate that, since January 2014, a downward trend has been experienced across the EU and Poland, which may change the export surplus production to new markets. It is estimated that, from 2014, consumption of poultry meat will increase from 12.5 million tons to 13.4 million tons. According to forecasts, the EU poultry production will grow in such countries as Poland, Romania and Hungary. This means that without a revival in exports, the manufacturers will find it difficult to achieve satisfactory profitability. Such opinions are also held by market analysts of agric-food businesses in Poland [13, 14].

4. Conclusions

(1) After Polish accession to the EU, due to increased access to the international market, the production of broiler chickens increased significantly.

(2) With unstable and sustaining upward trend of prices of feed, the increasing quantity of meat chickens laid crops and increasing supply of poultry meat for the domestic market and for export, the profitability of the domestic production of broiler chickens is of great concern.

(3) Growing exports of Polish poultry meat, which is undoubtedly the engine of the national production, maybe for the reasons which are beyond the control of domestic producers, do not meet producers' expectations.

(4) Despite undoubtedly critical political and economic situation in Ukraine, its poultry production, with various promotions and commercial privileges from the EU and the WTO, will be a serious competition for Polish poultry producers.

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